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# LOWER CALIFORNIAN SPECIES OF *CÆLOCENTRUM* AND *BERENDTIA*.

BY HENRY A. PILSBRY.

The Lower Californian species now known of these genera are confined to the plateaux of the middle portion of the peninsula.<sup>1</sup> Thus far none have been found in the mountainous region extending from La Paz southward.

*Cælocentrum*<sup>2</sup> is rather widely distributed in Mexico, though none are known in the States immediately bordering upon the Gulf of California.

W. M. Gabb described *Cælocentrum irregulare*<sup>3</sup> from the high table-lands of the interior, especially about "Moleje" (Muleje), where it lives hidden under loose volcanic rocks. This is on the east coast of the peninsula, a little below the twenty-seventh parallel.

Mons. J. Mabille has more recently described two species belonging to this group, under the generic name *Berendtia*. His *B. Diqueti*<sup>4</sup> is costulate with sculptured interstices, or, in his words, "*costellis lamellosis, obtusis, pulcherrime ornata; interstitiis costellarum striis minutissimis, costellisque arcuatis, sat regulariter dispositis, solum oculo armato perspicuis, munita.*" For the rest, it has 19-20 convex whorls, the embryonal 4 or 5 cancellated and beautifully granulose; the last whorl is solute, keeled at the insertion, and with an obtuse, short keel about the umbilical tract; aperture oval, angulate above; the columella is "*contorto-arcuata*,

<sup>1</sup> J. G. Cooper, in the *American Journal of Conchology*, IV, 1868, p. 212, footnote, states that "Mr. R. H. Stretch has recently brought from near Carson Valley, Nevada, lat. 39°, fossils, or rather casts, closely resembling the *Holospira Newcombiana* and *H. irregularis* Gabb, of Lower California. They occur, he says, in the same formation that contains *Carinifer*," etc. Nothing further is known on this topic.

<sup>2</sup> There is a genus *Cælocentrus* in Mollusca (*Enomphalidae*), based upon the Devonian *Enomphalus Goldfussi* d'Arch. and the Triassic *Cirrus Polyphemus* Laube. Its date is unknown to me, but I have not seen it mentioned earlier than about 1882.

<sup>3</sup> *Cylindrella (Urocoptis) irregularis* Gabb, *American Journal of Conchology*, III, p. 238, pl. 16, f. 4, 1867.

<sup>4</sup> *Bulletin de la Société Philomathique de Paris* (8), VII, 1895.

*ad basin obscure denticulata*” from the slight basal channel. Length  $30\frac{1}{2}$ –33, breadth 5 mm. It is from the “Plateau de San Xavier, N. lat.  $25^{\circ}$ .” Probably this should be lat.  $26^{\circ}$ , as a Mission similarly named lies near this parallel.

*B. minorina* Mabilie is presumably smaller, though no dimensions are given. It is also costellate, with 4 embryonal whorls minutely sculptured with spirally descending lines, handsomely granulose. The intercostal spaces of the rest of the shell are smooth. Whorls 17, with deep sutures. The last whorl is angulate toward the suture, very obtusely keeled on the back, solute and a little descending. The aperture is angulate above, ovate. Other features are alluded to under the description of *C. Gabbi*, below. It is from “Plateaux above the Arroya de la Purissima.” This is doubtless the Mission de la Purissima, above the twenty-sixth parallel of latitude, in W. longitude  $112^{\circ}$ .

Upon examining Gabb’s type lot of *C. irregulare* it became obvious at once that two species were included therein: one (*irregulare*) with the general features of the mainland *Cœlocentrums*, the other, represented by three specimens, with the last whorl free anteriorly and the aperture shaped like that of *Berendtia*. The latter may be described as follows :

***Cœlocentrum minorinum* var. *Gabbi* n. v. Fig. 1.**

Shell very slender and lengthened, cylindrical below, tapering and attenuated above, retaining the apex perfect; thin, rather fragile, covered with a light brown cuticle; composed of  $16\frac{1}{2}$ – $18\frac{1}{2}$  whorls, of which the initial one is globose, the earlier  $4\frac{1}{2}$  form a cylindric or apically swollen portion; increase in the diameter of the shell beginning with the fifth whorl and continuing for about 6 whorls, the remaining whorls of about equal diameter; all whorls decidedly convex, separated by well-impressed sutures, the last somewhat more lengthened, a little flattened peripherally, its latter portion becoming free (*Cylindrella*-like), the solute portion variable in length, somewhat descending, de-



Fig. 1.

cidedly carinated above, obtusely angular at base, with a slight spiral groove within the margin of the umbilical tract, the umbilicus pervious but small. Sculpture: earliest  $2\frac{1}{3}$  whorls with close, fine, straight vertical riblets only, the next 2 whorls with the riblets cut into beads by spiral striæ; following whorls with strong arcuate riblets separated by intervals of their own width, and about 62 in number on the next-to-the-last whorl. Aperture irregularly ovate, decidedly oblique, its length contained about five and one-half times in that of the shell; peristome thin, moderately expanded throughout, the inner margin dilated and obtusely angular in the middle; columella slightly concave, a little excavated below. Internal column rather slender, smooth, oblique and slightly gibbous below, less swollen within each whorl than in *C. irregularare*.

Alt. 24.5, diam. of last whorl above aperture 4.5, longest axis of aperture 4.5 mm.; diam. of second whorl 1.7 mm.

Compared with *C. irregularare* Gabb, this form is somewhat more attenuated, with the latter part of the last whorl projecting free, the aperture more oblique and of a wholly different form, strongly resembling that of *Berendtia Taylori*. The riblets are more slender and threadlike; finally the retention of the early whorls may be another difference, but too few specimens of either species are known to warrant insistence upon this character at present.

This form differs from *C. Diqueti* in being smaller, with fewer whorls, without sculpture between the riblets, and with scarcely any observable twist to the columella. It is evidently more nearly allied to *C. minorina*; but the riblets are arcuate rather than "*fere rectilineis*;" only the third and fourth whorls have spiral granulose striæ; the last whorl can hardly be said to be "*versus suturam angulato, dorso obtusissime carinato*;" the aperture is not "*paululum obliqua*," but decidedly oblique; and the columella is simply concave above, channeled at base, not "*torta, leviter incrasata*." Whether these differences indicate specific distinction cannot well be decided in the absence of a figure or dimensions of Mabilie's species, or of specimens for comparison.

In the figure the sculpture is omitted, except on the earlier and later whorls.

**Cœlocentrum Eisenianum** n. sp. Fig. 2.

Shell excessively slender and lengthened, the upper half much attenuated, retaining the apex in adult individuals; thin, rather fragile, light brown. Whorls 21-22, the first globose, the second slightly wider, then decreasing slightly in calibre to the fifth; the earlier  $4\frac{1}{2}$  whorls thus forming a pupoid or slightly club-shaped nepionic portion, below which the diameter slowly increases; last 4 or 5 whorls of nearly equal diameter. All whorls strongly convex; the last whorl a trifle flattened peripherally, its latter third becoming free and deviating tangentially somewhat, the free portion carinated above, having a cordlike keel about the umbilical region below. Umbilicus small. Sculpture: first  $2\frac{1}{2}$  whorls bearing very close, fine, delicate vertical riblets; next 2 whorls with these riblets cut into granules by spiral decussating lines; following whorls with close, fine, slightly arcuate riblets, about 47 in number on the next-to-last whorl. Aperture decidedly oblique, rhombic, its length contained nearly eight times in that of the shell; peristome thin, continuous, slightly expanded throughout.

Alt. 23.5, diam. of last whorl above aperture 2.7, length of aperture 3 mm.; diam. of second whorl 1.3 mm.

Lower California (Fred L. Button).

This species differs from *C. minorinum* Gabb in the following respects: With the same length it has a much more slender form, more numerous and narrower whorls, coarser costulation and a smaller aperture. The apical whorls are, moreover, rather more club-shaped. It is not closely related to any other species known.



Fig. 2.

**Cœlocentrum irregulare** (Gabb). Figs. 3, 4.

After eliminating the specimens of *C. minorinum* Gabb, there remain four imperfect examples of this species in the collection presented by Gabb to the Academy. Two of these are young or broken shells, showing only the tapering early growth, without the embryonic whorls. They are about 11 mm. long. Another (fig.

3) is Gabb's figured type, which likewise lacks the attenuated early portion; and the fourth example is an adult shell of which only the lower  $3\frac{1}{2}$  whorls remain (fig. 4). The apical characters are therefore still to be ascertained, as well as the total number of whorls, although the species will probably prove to be constantly truncated when adult.

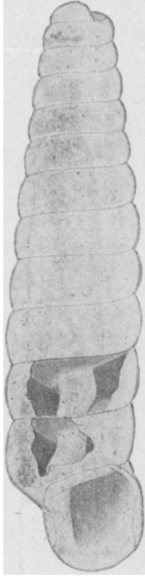


Fig. 3.

The type (fig. 3, sculpture omitted) retains 12 whorls, which are convex and sculptured like those of *B. minorinum* Gabb, except that the riblets are stronger. The whorls are shorter, so that a greater number is contained in the same length of shell than in the other

species mentioned. There are 58 riblets on the next-to-the-last whorl. *The last whorl does not in the least become free but remains adnate, as in the Mexican species.* The aperture is rounded,

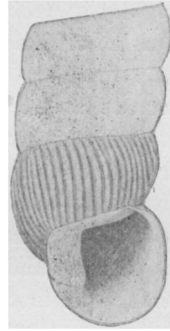


Fig. 4.

squarely truncate above, and but very slightly oblique, the peristome is moderately expanded, the outer and basal margins arcuate, columellar margin broadly dilated; parietal margin adnate to the preceding whorl, nearly straight and nearly horizontal. The figured type (fig. 3), which is decollate, measures: Alt. 19, diam. above aperture 4.2 mm.; alt. of aperture 3.5 mm. Another specimen (fig. 4), broken, but with the aperture perfectly adult, measures: Diam. above aperture 4.8 mm.; aperture, alt. 4, diam. 4 mm.

*C. irregulare* is much like the species of the Mexican mainland except in being smaller and especially more slender. All the specimens known are bleached to a faint brown tint or white.

#### BERENDTIA.

*Berendtia* was based by Crosse and Fischer upon the single species *Taylori* of Pfeiffer, with which Gabb's *Cylindrella Newcombiana* is identical. The species is from the same region inhabited by *Cælocentrum irregulare*. The apex of *Berendtia* is retained in the adult state, as in *Cælocentrum minorinum* Gabb and *C. Eisenianum*,

but unlike most other species of that genus. Beginning with a bulbous tip as in *C. Eisenianum*, there are two finely costulate whorls; then spiral striæ appear and continue for a half whorl, when the termination of the nepionic stage is reached and the oblique costulation of the adult stage begins. The apical characters are therefore essentially as in *Cælocentrum*. The aperture is ovate with free and entire peristome, very similar to that of *Cælocentrum minorinum* Gabbi.

The only feature remaining to differentiate *Berendtia* from *Cælocentrum* is the extremely slender axis, imperforate throughout.

It is evident that *Berendtia* is a tangent from *Cælocentrum*, and distinguished from certain Lower Californian species of that genus solely by the reduction of the columella from a tube to a solid style, as in the genus *Eucalodium*.